LPODnet

M&C Netbook Accessory for the LPOD or SPOD PS 1, PS 1.5, PS 2 Operation Manual

IMPORTANT NOTE: The information contained in this document supersedes all previously published information regarding this product. Product specifications are subject to change without prior notice.

Part Number MN-LPODNET Revision 3

LPODnet

M&C Netbook Accessory for the LPOD or SPOD PS 1, PS 1.5, PS 2 Operation Manual

Part Number MN-LPODNET
Revision 3

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PREFACE

About this Manual

This manual provides operation information for the Comtech EF Data LPOD*net*, a **M**onitor and **C**ontrol (M&C) accessory used with CEFD's LPOD PS 1, PS 1.5, and PS 2 Outdoor Amplifiers / Block Up Converters (BUCs), and SPOD PS 1, PS 1.5, and PS 2 Outdoor Amplifiers. This manual is intended for use by the persons responsible for the operation and maintenance of the LPOD*net* M&C Netbook Accessory and these SSPAs.

Related Documents

- *Comtech EF Data LPOD Outdoor Amplifier / Block Up Converter (BUC) Installation and Operation Manual (CEFD P/N MN-LPOD)*
- *Comtech EF Data SPOD Outdoor Amplifier Installation and Operation Manual (CEFD P/N MN-SPODPSX)*

Disclaimer

Comtech EF Data has reviewed this manual thoroughly in order to provide an easy-to-use guide to your equipment. All statements, technical information, and recommendations in this manual and in any guides or related documents are believed reliable, but the accuracy and completeness thereof are not guaranteed or warranted, and they are not intended to be, nor should they be understood to be, representations or warranties concerning the products described. Further, Comtech EF Data reserves the right to make changes in the specifications of the products described in this manual at any time without notice and without obligation to notify any person of such changes.

If you have any questions regarding this equipment or the information in this manual, please contact the Comtech EF Data Customer Support Department.

Reporting Comments or Suggestions Concerning this Manual

Comtech EF Data welcomes comments and suggestions regarding the content and design of this manual. Contact the Comtech EF Data Technical Publications Department:

TechnicalPublications@comtechefdata.com

Conventions and References

Patents and Trademarks

See all of Comtech EF Data's Patents and Patents Pending at http://patents.comtechefdata.com.

Comtech EF Data acknowledges that all trademarks are the property of the trademark owners.

Warnings, Cautions and Notes

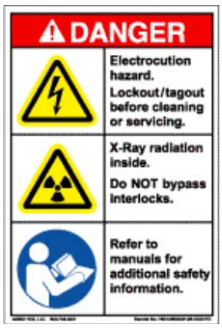
A <u>WARNING</u> informs you about a possible hazard that MAY CAUSE DEATH or SERIOUS INJURY.

A <u>CAUTION</u> informs you about a possible hazard that MAY CAUSE INJURY or PROPERTY DAMAGE.

A <u>NOTE</u> gives important information about a task or the equipment.

A <u>REFERENCE</u> directs you to important additional information about a task or the equipment.

Examples of Multi-Hazard Notices



Recommended Standard Designations

The new designation of the Electronic Industries Association (EIA) supersedes the Recommended Standard (RS) designations. References to the old designations may be shown when depicting actual text (e.g., RS-232) displayed on the SSPA Web Server pages or serial remote interface. All other references in the manual refer to EIA designations.

Metric Conversion

This manual provides Metric conversion information on the inside back cover of this manual as a means to assist the operator in cross-referencing non-Metric to Metric conversions.

Electrical Safety Notifications

You should carefully review the information that follows.

Safety Notice

The LPOD*net* and LPOD or SPOD products are used with equipment that has been designed to minimize exposure of personnel to hazards.

The operators and technicians must:

- Know how to work around, with and on high voltage equipment.
- Exercise every precaution to ensure personnel safety.
- Exercise extreme care when working near high voltages.
- Be familiar with the warnings presented in this document.

The LPOD and SPOD prime power supply inputs use Neutral Fusing – Double pole / neutral fusing.

Installation Guidelines Regarding Power Line Quality

Comtech EF Data has become familiar with the varying quality of the AC power grid around the world. The following offers some installation guidelines that should help ensure a reliable installation.

- **Surge suppression:** High voltage surges can cause failure of the power supply. These surges are typically caused by circuit switching on the main AC power grid, erratic generator operation, and also by lightning strikes. While the transceiver does have built in surge suppression, if the unit will be installed in a location with questionable power grid quality, Comtech EF Data recommends installation of additional power conditioning/surge suppression at the power junction box.

- **Grounding:** The transceiver provides a grounding terminal. This is provided to allow you to ground the transceiver to the antenna's grounding network. All components installed at the antenna should be grounded to a common grounding point at the antenna.

- **Electrical welding:** If welding needs to take place at the antenna, disconnect all cables from the transceiver except for the ground wire. Cap all RF connections with terminations. This will prevent damage to the input/output circuitry of the transceiver.

- **Lightning:** Lightning strikes on or around the antenna will generate extremely high voltages on all cables connected to the transceiver. Depending on the severity of the strike, the transceiver's internal surge protection combined with the recommended external suppression may protect the transceiver's power supply. However, if the installation will be in an area with a high probability of lightning strikes, Comtech EF Data recommends the installation of surge suppression on the RF and IF cables.

  For further information, contact Comtech EF Data's Customer Support Department.

Statement of RoHS Compliance

The RoHS (***R**estriction of **H**azardous **S**ubstances*) directive 2002/95/EC restricts the use of six hazardous materials found in electrical and electronic products.

Restricted materials are hazardous to the environment and pollute landfills, and are dangerous in terms of occupational exposure during manufacturing and recycling.

The Samsung NB-30 Plus Netbook (Model No. NP-NB30-JP01US), used as an Ethernet M&C accessory for CEFD's LPOD and SPOD families of products, has been certified to be free of the following substances mandated under RoHS: **lead (Pb)**, **mercury (Hg)**, **cadmium (Cd)**, **hexavalent chromium (Cr6+)**, **polybrominated biphenyls (PBB)**, and **polybrominated disphenyl ethers (PBDE)**.

Warranty Policy

Comtech EF Data products are warranted against defects in material and workmanship for a specific period from the date of shipment, and this period varies by product. In most cases, the warranty period is two years. During the warranty period, Comtech EF Data will, at its option, repair or replace products that prove to be defective. Repairs are warranted for the remainder of the original warranty or a 90 day extended warranty, whichever is longer. Contact Comtech EF Data for the warranty period specific to the product purchased.

For equipment under warranty, the owner is responsible for freight to Comtech EF Data and all related customs, taxes, tariffs, insurance, etc. Comtech EF Data is responsible for the freight charges only for return of the equipment from the factory to the owner. Comtech EF Data will return the equipment by the same method (i.e., Air, Express, Surface) as the equipment was sent to Comtech EF Data.

All equipment returned for warranty repair must have a valid RMA number issued prior to return and be marked clearly on the return packaging. Comtech EF Data strongly recommends all equipment be returned in its original packaging.

Comtech EF Data Corporation's obligations under this warranty are limited to repair or replacement of failed parts, and the return shipment to the buyer of the repaired or replaced parts.

Limitations of Warranty

The warranty does not apply to the Samsung NB30 Plus Netbook that is provided in Comtech EF Data Kit KT-0000203. In this instance, the Samsung NB30 Plus Netbook original manufacturer's warranty and policies supercede any such warranties otherwise afforded Comtech EF Data products (e.g., the CA-0000352 cable provided in Kit KT-0000203).

The warranty does not apply to any part of a product that has been installed, altered, repaired, or misused in any way that, in the opinion of Comtech EF Data Corporation, would affect the reliability or detracts from the performance of any part of the product, or is damaged as the result of use in a way or with equipment that had not been previously approved by Comtech EF Data Corporation.

The warranty does not apply to any product or parts thereof where the serial number or the serial number of any of its parts has been altered, defaced, or removed.

The warranty does not cover damage or loss incurred in transportation of the product.

The warranty does not cover replacement or repair necessitated by loss or damage from any cause beyond the control of Comtech EF Data Corporation, such as lightning or other natural and weather related events or wartime environments.

The warranty does not cover any labor involved in the removal and or reinstallation of warranted equipment or parts on site, or any labor required to diagnose the necessity for repair or replacement.

The warranty excludes any responsibility by Comtech EF Data Corporation for incidental or consequential damages arising from the use of the equipment or products, or for any inability to use them either separate from or in combination with any other equipment or products.

A fixed charge established for each product will be imposed for all equipment returned for warranty repair where Comtech EF Data Corporation cannot identify the cause of the reported failure.

Exclusive Remedies

Comtech EF Data Corporation's warranty, as stated is in lieu of all other warranties, expressed, implied, or statutory, including those of merchantability and fitness for a particular purpose. The buyer shall pass on to any purchaser, lessee, or other user of Comtech EF Data Corporation's products, the aforementioned warranty, and shall indemnify and hold harmless Comtech EF Data Corporation from any claims or liability of such purchaser, lessee, or user based upon allegations that the buyer, its agents, or employees have made additional warranties or representations as to product preference or use.

The remedies provided herein are the buyer's sole and exclusive remedies. Comtech EF Data shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory.

Getting Help

Review the Warranty Policy before contacting Comtech EF Data Technical Support or Customer Service.

Contacting Comtech EF Data

Contact Comtech EF Data for:

- ***Technical Support –*** Product support or training.
- ***Customer Service –*** Information on returning an in-warranty or out-of-warranty product for upgrade or repair. **Be prepared to provide the product model number and its serial number.**

Contact Comtech EF Data Customer & Technical Support during normal business hours (Monday through Friday, 8 A.M. to 5 P.M Mountain Standard Time (MST)):

For:		Contact:
LPOD/SPOD Technical Support and Service	**Telephone**	**+1.480.333.4357**
	Email	**techsupport@comtechefdata.com**
	Fax	**+1.480.333.2500**
Comtech EF Data Web Site	**Main Page**	**http://www.comtechefdata.com**
	Customer and Technical Support	**http://www.comtechefdata.com/support.asp**
	RMA (Return Material Authorization)	**http://www.comtechefdata.com/rmaform.asp**
Comtech EF Data Main Number		**+1.480.333.2200**
Mailing Address		**2114 West 7th Street Tempe, Arizona 85281 USA**

Returning a Product for Upgrade or Repair

Step	Task
1	Go to the Comtech EF Data **Service** page (http://www.comtechefdata.com/service.asp) and read the **Return Material Authorization** section in its entirety.
2	Request a Return Material Authorization Number: • *On the Comtech EF Data **Home** page:* From the **SUPPORT** column at the bottom of the page, select the **RMA Request** hyperlink; ***OR*** • *On the Comtech EF Data **Support** page:* Click **[Send RMA Request]**; ***OR*** • *On the Comtech EF Data **Service** page*: Select the **Return Material Authorizaion** hyperlink; • Fill out the RMA form completely; • Click **[Send Email]**. ***Alternately:*** • Send an e-mail providing this same detailed information to Comtech EF Data Customer Service (**service@comtechefdata.com**). • Contact Comtech EF Data Customer & Technical Support by phone or fax.
3	Pack the product in its original shipping carton and protective packaging.
4	Ship the product back to Comtech EF Data. **Shipping charges should be prepaid.**

Chapter 1. INTRODUCTION

1.1 Overview

This menual is intended for the persons responsible for the operation and maintenance of Comtech EF Data's LPOD Outdoor Amplifier / Block Up Converter (BUC) systems, and SPOD Outdoor Amplifier systems (the LPOD and SPOD are referred to collectively as the SSPAs throughout the remainder of this document). This manual is prepared with the assumption that you are familiar with the functionality and operability of the products with which this product is designed to interface, as well as the portable device – whether it is the Samsung NB30 Plus Netbook PC supplied by CEFD, or any other compatible desktop, portable, or handheld computing device – used to access the SSPA operational firmware.

Comtech EF Data strongly recommends that you first become familiar with the LPOD or SPOD **Installation and Operation Manual** ***before proceeding.***

Comtech EF Data's LPOD*net* M&C Accessory Kit (CEFD Kit KT-0000203) is used to access the Ethernet-based monitor and control (M&C) functionality of the SSPA.

Communication between the SSPA and the LPOD*net* Netbook is accomplished by connecting the provided CA-0000352 RJ-45 to 19-pin adapter cable between the Netbook's RJ-45 Ethernet external network jack to either the 19-pin '**J6 | COM1'** remote communications port on the standalone SSPA, or the '**J1'** receptacle on the 1:1 Redundant Loop Cable Assembly.

Then, applicable for both Standalone and 1:1 Redundancy System applications, the LPOD*net* permits you to access the SSPA Web Server (HTTP) Interface to monitor SSPA operations and execute remote commands and queries,

The KT-0000203 LPODnet M&C Accessory Kit provides a computing device as the operational medium for this interface (i.e., (CEFD P/N PP-0000134, Samsung NB-30 Plus Netbook Model No. NP-NB30-JP01US), Even so, the CA-0000352 adapter cable provided in this kit is compatible for connecting the SSPA to any portable computing

device that runs the Microsoft Windows 7 operating system (or Windows XP or earlier operating systems) and the Microsoft Windows' Internet Explorer 6.0 or later Web browser (or equivalent), and is configured with Ethernet functionality and an available RJ-45 Ethernet external network jack.

1.2 Samsung NB30 Plus – Key Operational Specifications Reference

Operating system	Microsoft Windows 7 SNPC OA for Samsung notebook products
Processor	Intel® ATOM™ Processor N450 (1.66 GHz, 667 MHz, 512 KB)
System Memory	1 GB (DDR2 / 1 GB x 1)
Display	10.1" WSVGA (1024 x 600) LCD, Non-Gloss, LED Back Light
I/O	• 10/100 LAN (RJ-45) • Integrated WiFi (IEEE 802.11 b/g/n) • 3-in-1 Multi Card Slot (SD, SDHC, MMC) • 3X USB 2.0 (1 chargeable) • VGA-out • DC-In • Headphone-out • Microphone-in • Internal Microphone
Power	6-Cell 5900mAh removable / rechargeable lithium-ion battery; 100-240V~400mA 50-60Hz LPS AC power adapter
Operating humidity range	0-90%
Miscellaneous compliance standards	UL, CUL, NOM, CAS NRTL/C, FCC Class B Certified

1.3 Using Memory Expansion Cards

The Samsung NB30 Plus Netbook's CPU features a flash-memory controller that ensures preconfigured and stored LPOD*net *settings are retained even if the rechargeable 5900mAh lithium-ion battery gets low or fails completely.

Figure 1-1. SD/SDHC/MMC Memory Card Usage
(Not Included)

In addition to supporting USB 2.0-compatible flash drives, the Samsung NB30 Plus Netbook supports Secure Digital, Secure Digital High-Capacity, and Multimedia Memory Cards (SD/SDHC/MMC) such as the HP 512MB MINISD (shown as an example in **Figure 1-1**).

While not required for normal operation (and not provided by Comtech EF Data), such storage devices provide the ability for you to transfer software programs (such as third party Telnet Client or MIB/SNMP shareware) and stored SSPA operational information between portable devices, as permissible under applicable Comtech EF Data Warranties or any applicable user License Agreements.

Notes:

Chapter 2. SETUP

2.1 Getting Started

The items shown in **Figure 2-1** and **Figure 2-2** or **Figure 2-3** depict what is minimally required to use this operation manual:

CEFD LPODnet Accessory Kit P/N KT-0000203			
Item	Qty	CEFD Part Number	Description
1	1	PP-0000134	Samsung NB30 Plus Netbook (Model NP-NB30-JP01US)
2	1	PP-0000138	USB Utility Flash Drive
3	1	CA-0000352	Ethernet Interface Cable Assembly

Figure 2-1. LPODnet Accessory Kit (CEFD P/N KT-0000203)

LPOD PS 1 LPOD PS 1.5 LPOD PS 2

Figure 2-2. Comtech EF Data's LPOD Outdoor Amplifiers / Block Up Converters
(Sold separately)

SPOD PS 1 SPOD PS 1.5 SPOD PS 2

Figure 2-3. Comtech EF Data's SPOD Outdoor Amplifiers
(Sold separately)

2.2 Connecting the LPODnet to the SSPA Using the CA-0000352 Ethernet Interface Cable

The **Figure 2-4** diagram shows the connections for the CA-0000352 Ethernet Interface Cable. The cable's RJ-45 ends (labeled '**J2**' and '**J3**') connect either to the LPODnet Netbook or to a user-provided Ethernet switch or hub. The '**P1**' 19-pin circular connector end connects to either the SSPA's '**J6 | COM1'** port in standalone applications, or the 1:1 Redundant Loop Cable Assembly's **'J1'** receptacle in 1:1 redundancy applications.

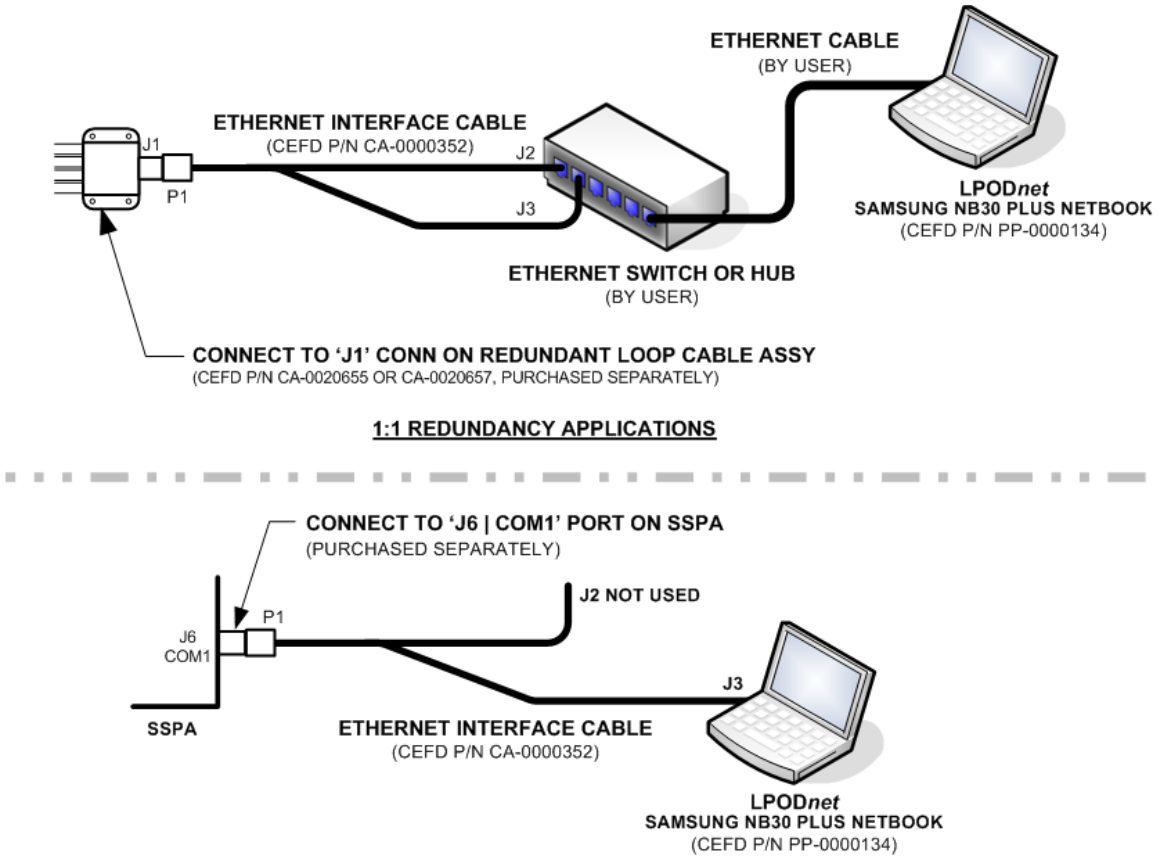


Figure 2-4. CA-0000352 Cable Connections Diagram

2.2.1 CA-0000352 RJ-45 Connectors

2.2.1.1 (1X) RJ-45 Connection for Standalone Applications

***For standalone applications, the CA-0000352 Ethernet Interface Cable connects directly between the SSPA and the* LPOD*net*.**

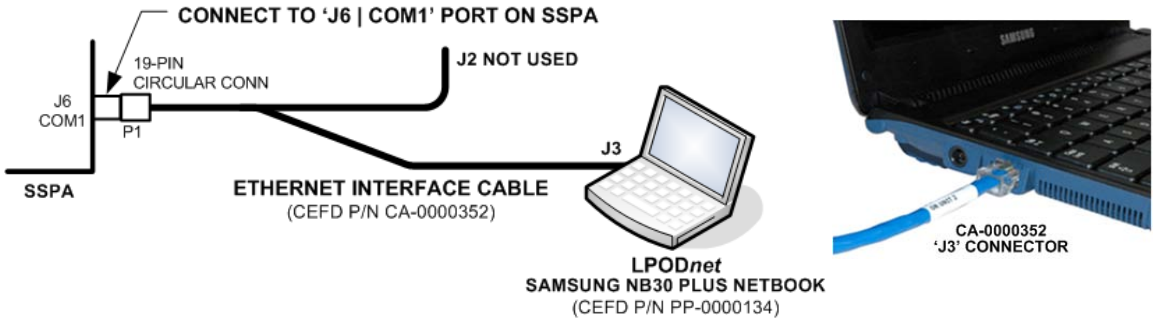


Figure 2-5. CA-0000352 RJ-45 Standalone Application Direct Connection

or standalone applications only – Follow these steps to directly connect the Ethernet Interface Cable RJ-45 'J3' connector to the LPODnet (**Figure 2-5**):

Step	Task
1	Press down the tab on the CA-000352 cable '**J3**' RJ-45 plug, and then insert the plug into the LPOD*net*'s RJ-45 Ethernet network jack. ***Be sure to tie back (or otherwise segregate from inadvertent use) the CA-0000352 RJ-45 connector labeled* J2-UNIT 1 REDSYS ONLY.**
2	The connection is complete when the tab 'clicks' into position inside the LPODnet 's RJ-45 Ethernet network jack.

2.2.1.2 (3X) RJ-45 Connections for 1:1 Redundancy Applications

***Before proceeding further, you should first read the detailed information provided in* Appendix A. 1:1 REDUNDANCY *in either the* LPOD Outdoor Amplifier / Block Up Converter (BUC) Installation and Operation Manual (CEFD P/N MN-LPOD) *or the* SPOD Outdoor Amplifier Installation and Operation Manual (CEFD P/N MN-SPODPSX).**

Typical for any 1:1 Redundancy configuration, the '**J2**' and '**J3**' RJ-45 connectors are both plugged into a user-provided Ethernet switch or hub. A user-provided Ethernet cable is then connected from the Ethernet switch or hub to the LPODnet 's RJ-45 Ethernet network jack.

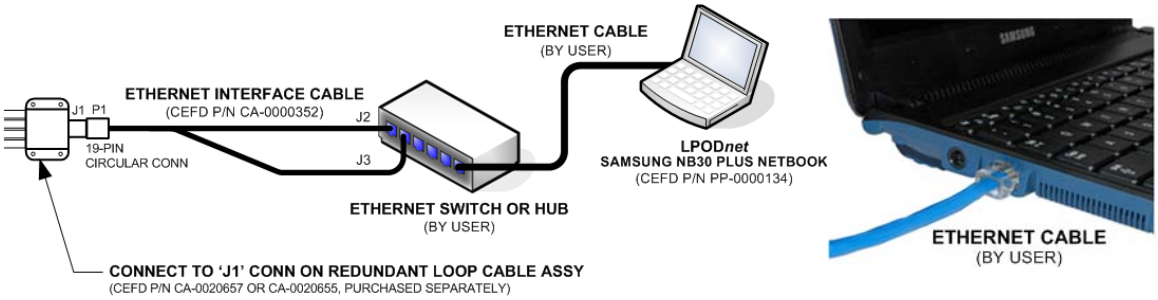
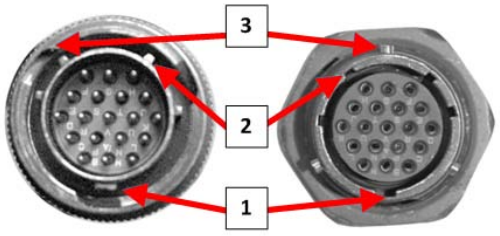


Figure 2-6. CA-0000352 RJ-45 1:1 Redundancy Application Connections

For 1:1 Redundancy applications only – Follow these steps to connect the Ethernet Interface Cable RJ-45 '**J2**' and **'J3**' connectors (**Figure 2-6**):

Step	Task
1	Typical for each CA-0000352 RJ-45 connection ('J2' and 'J3'): Press down the tab on the pertinent RJ-45 plug, and then insert the plug into its corresponding jack in the user-provided Ethernet switch or hub. The connection is complete when the tab 'clicks' into position inside the jack.
2	Connect the user-provided Ethernet switch or hub to the LPODnet Netbook with a user-provided Ethernet cable. Typical for either end of the user cable, press down the tab on the cable RJ-45 plug, and then insert one plug end into the switch or hub jack, and the other end into the LPOD*net*'s RJ-45 Ethernet network jack. The connection is complete when the tab 'clicks' into position inside the jack.

2.2.2 CA-0000352 'P1' 19-pin Circular Connector



Feature	Description
1	Primary Alignment features
2	Secondary Alignment features
3	Sleeve Lock features

Figure 2-7. CA-0000352 19-pin Circular Connector

The 19-pin circular connector, labeled 'P1' on the CA-000352 Ethernet Interface Cable, features a keyed configuration. **Figure 2-7** shows the mating relationship between the '**P1**' connector and the '**J6 | COM1'** socket on the SSPA, or the '**J1**' socket on the Redundant Loop Cable Assembly (CEFD P/N CA-0020655 for Rx / Tx applications, or CA-0020657 for Tx-only applications). Follow these steps to install the CA-0020526 Serial Interface Cable's male 19-pin circular connector into the SSPA's '**J6 | COM1**' port or the 1:1 Redundant Loop Cable's '**J1**' receptacle:

Step	Task
1	Engage the primary and secondary alignment tabs on the male connector with the mating cutouts on the female socket.
2	Push the male connector into the female socket.
3	Turn the male connector sleeve clockwise until the sleeve lock cutouts engage fully with the female socket tabs and you hear a "click" sound.

2.2.2.1 Circular Connector Connection for Standalone Applications

For standalone configurations, the CA-0020526 Serial Interface Cable connects directly between the CLC-10 and the SSPA.

Connect the CA-0020526 Serial Interface Cable's 19-pin circular connector to the SSPA's '**J6|COM1**' port as per the steps described in **Sect. Error! Reference source not found.**, and as shown in **Figure 2-8**.

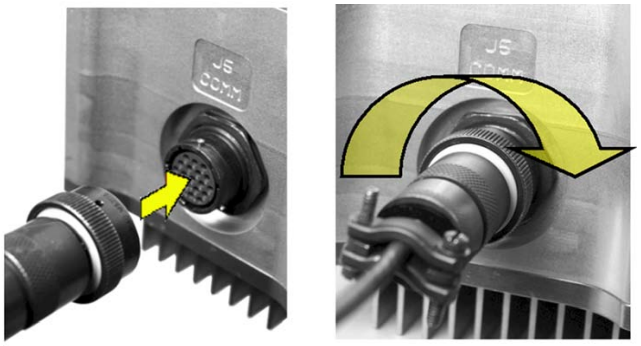


Figure 2-8. LPODnet to SSPA Connection – Standalone Applications

2.2.2.2 Circular Connector Connection for 1:1 Redundancy Applications

***Before proceeding, you should review Appendix A. 1:1 REDUNDANCY in Comtech EF Data's* LPOD Outdoor Amplifier / Block Up Converter (BUC) Installation and Operation Manual (CEFD P/N MN-LPOD) *or the* SPOD Outdoor Amplifier Installation and Operation Manual (CEFD P/N MN-SPODPSX).**

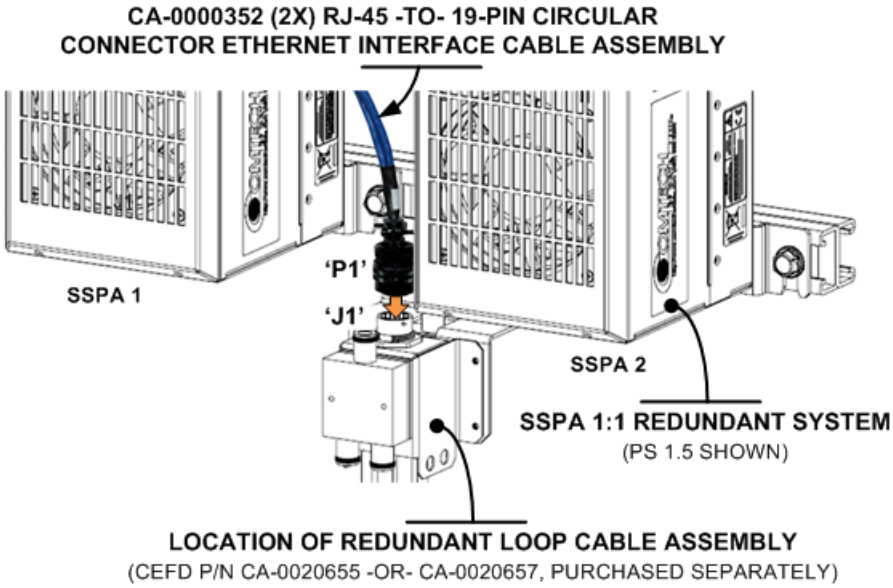


Figure 2-9. CA-0000352 Cable Connection for SSPA 1:1 Redundancy System

Connect the CA-0000352 Ethernet Interface Cable's '**P1**' 19-pin circular connector to the Redundant Loop Cable Assembly '**J1'** receptacle as shown in **Figure 2-9**.

2.3 1:1 Redundancy Applications – Cabling Requirements

Figure 2-10 and **Figure 2-11** show the SSPA 1:1 Redundancy System cabling requirements.

See **Figure 2-9** for an example of the CA-0000352 '**P1**' -to- Redundant Loop Cable Assembly User M&C '**J1**' connection.

2.4 Energizing the RF Equipment

If the waveguide is not terminated correctly, it transmits dangerous levels of electromagnetic radiation. THIS CAN CAUSE INJURY. Before you energize or operate any SSPA waveguide unit, make sure to correctly terminate the waveguide on the 'J2 | RF OUT' port.

The* LPOD *Outdoor Amplifiers / Block Up Converters (BUCs) and the SPOD Outdoor Amplifiers do not have Power On/Off switches. Use the 'J3 | POWER IN' connector to energize the system.

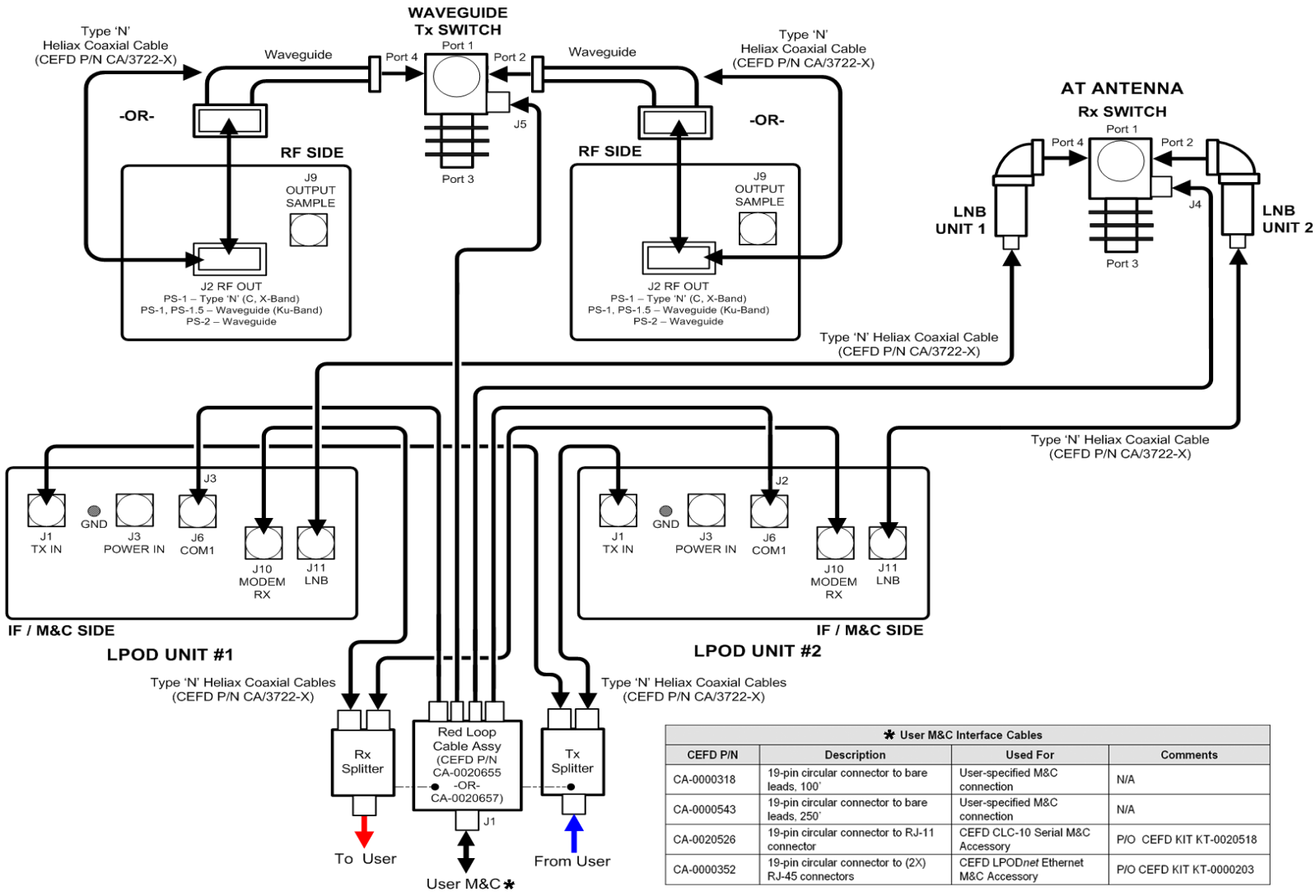
Step	Task
1	Make sure the SSPA is connected correctly to the LPODnet as defined in Sect. 2.2.
2	Connect the applicable prime power source to the SSPA 'J3 | POWER IN' port.
3	Energize all components in the system.

2.5 LPODnet Operation

Chapter 3. ETHERNET-BASED M&C USING THE LPODnet

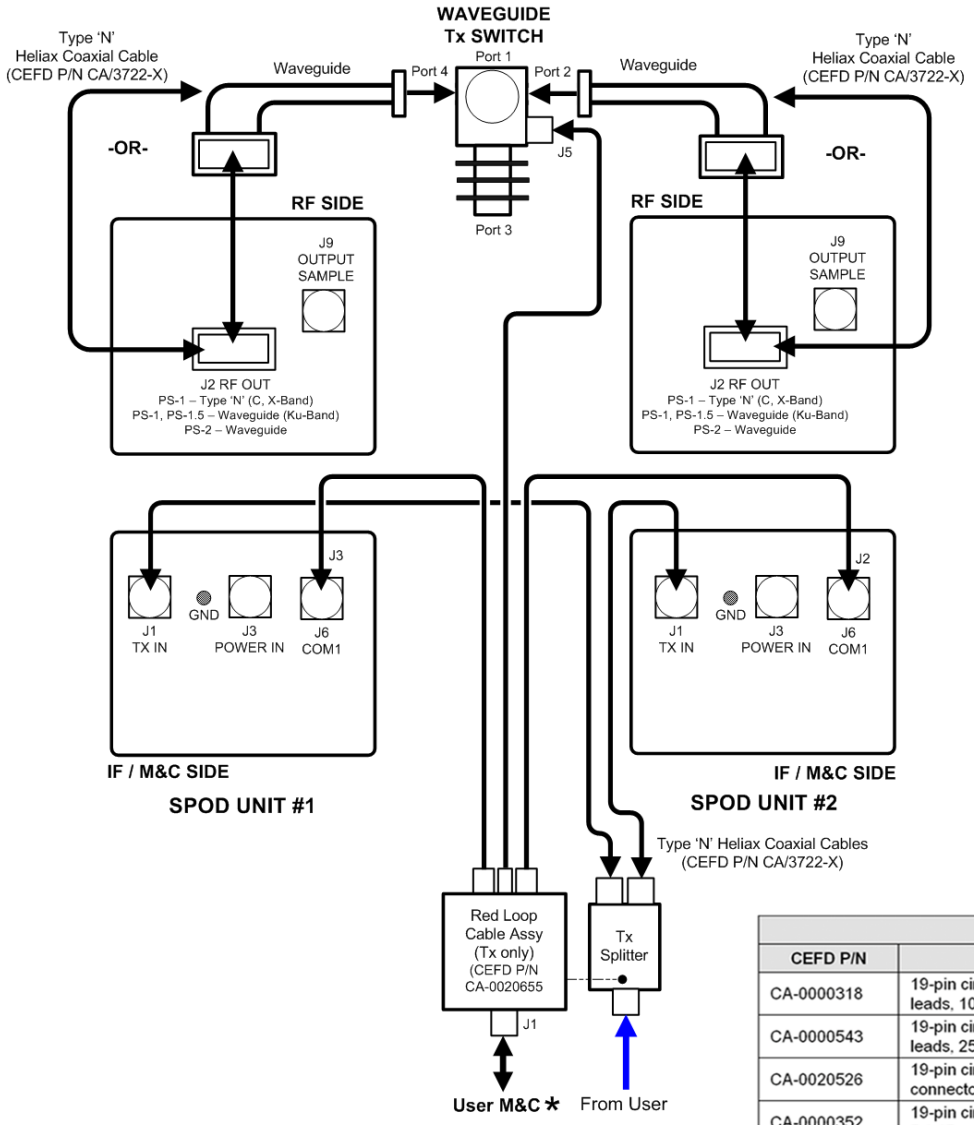
As accessed by the LPODnet , the SSPA's 100BaseT/10BaseTx Ethernet Management Interface supports three management protocols:

- SNMP with public and private MIB
- Telnet Client interface for remote product M&C
- Web Server (HTTP) Interface for complete product management



* User M&C Interface Cables			
CEFD P/N	**Description**	**Used For**	**Comments**
CA-0000318	19-pin circular connector to bare leads, 100'	User-specified M&C connection	N/A
CA-0000543	19-pin circular connector to bare leads, 250'	User-specified M&C connection	N/A
CA-0020526	19-pin circular connector to RJ-11 connector	CEFD CLC-10 Serial M&C Accessory	P/O CEFD KIT KT-0020518
CA-0000352	19-pin circular connector to (2X) RJ-45 connectors	CEFD LPOD*net* Ethernet M&C Accessory	P/O CEFD KIT KT-0000203

Figure 2-10. LPOD 1:1 Redundancy System Cabling Schematic



* User M&C Interface Cables			
CEFD P/N	**Description**	**Used For**	**Comments**
CA-0000318	19-pin circular connector to bare leads, 100'	User-specified M&C connection	N/A
CA-0000543	19-pin circular connector to bare leads, 250'	User-specified M&C connection	N/A
CA-0020526	19-pin circular connector to RJ-11 connector	CEFD CLC-10 Serial M&C Accessory	P/O CEFD KIT KT-0020518
CA-0000352	19-pin circular connector to (2X) RJ-45 connectors	CEFD LPOD*net* Ethernet M&C Accessory	P/O CEFD KIT KT-0000203

Figure 2-11. SPOD 1:1 Redundancy System Cabling Schematic

Notes:

Chapter 3. ETHERNET-BASED M&C USING THE LPOD*NET*

3.1 Important Disclaimer

The bulk of content in this chapter is taken directly from **Chapter 4. ETHERNET-BASED REMOTE PRODUCT MANAGEMENT** in Comtech EF Data's **LPOD Outdoor Amplifier / Block Up Converter (BUC) Installation and Operation Manual** (CEFD P/N MN-LPOD). With few exceptions, this content is also identical to the **SPOD Outdoor Amplifier Installation and Operation Manual** (CEFD P/N MN-SPODPSX).

This manual assumes user familiarity with SSPA (LPOD or SPOD) operations. The information provided in this chapter is intended only for quick reference purposes. You should refer primarily to the latest revision of the pertinent SSPA manual (CEFD P/N MN-LPOD or MN-SPODPSX) for the most current Web Server Pages available to the SSPA via Ethernet-based remote product management.

3.2 Introduction

The SSPA's Ethernet Management Interfaces are accessible when the unit is connected to the LPOD*net* in either Standalone or 1:1 Redundancy operation.

As this manual assumes user familiarity with SSPA operations, you should also see the pertinent detailed information provided in the pertinent SSPA manual (**MN-LPOD or MN-SPODPSX**) as follows:

- For detailed reference to the Remote Commands and Queries available to the SSPA via Telnet Client, see **CHAPTER 5. SERIAL-BASED REMOTE PRODUCT MANAGEMENT**.

- For detailed reference to the functionality afforded the individual Web pages depicted in this chapter, see **Sect. 4.5 Web Server (HTTP) Interface** in **Chapter 4. ETHERNET-BASED REMOTE PRODUCT MANAGEMENT**.

3.3 SSPA Ethernet Management Interface Protocols

As accessed by the LPOD*net*, the SSPA's 100BaseT/10BaseTx Ethernet Management Interface supports three separately-operated management protocols:

- **Simple Network Management Protocol (SNMP).** This requires a user-supplied Network Management System (NMS) and a user-supplied Management Information Base (MIB) File Browser.
- **Telnet Interface.** This requires use of the user PC's Command-line interface, or a user-supplied terminal emulation program such as HyperTerminal.
- **SSPA Web Server (HTTP) Interface.** This requires a compatible user-supplied web browser such as Internet Explorer.

3.4 SSPA SNMP Interface

The *Simple Network Management Protocol* (SNMP) is an Internet-standard protocol for managing devices on IP networks. An SNMP-managed network consists of three key components:

- **The managed device.** This includes the SSPA.
- **The SNMP Agent.** The software that runs on the SSPA. The SSPA SNMP Agent supports both **SNMPv1** and **SNMPv2c**.
- **The user-supplied Network Management System (NMS).** The software that runs on the manager.

3.4.1 SSPA Management Information Base (MIB) Files

An MIB file is used for SNMP remote management of a unique device, and consist of a tree of nodes called Object Identifiers (OIDs). Each OID provides remote management of a particular function. You should compile these MIB files in a user-supplied MIB Browser or SNMP Network Monitoring System server.

The following MIB files are associated with the SSPA:

MIB File/Name (where 'x' is revision letter)	Description
FW-0000291x.mib ComtechEFData Root MIB file	ComtechEFData MIB file gives the root tree for ALL Comtech EF Data SSPA or SPOD products (PS 1, PS 1.5, PS 2) and consists of only the following OID: Name: comtechEFData Type: MODULE-IDENTITY OID: 1.3.6.1.4.1.6247 Full path: iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtechEFData(6247) Module: ComtechEFData

MIB File/Name (where 'x' is revision letter)	Description
FW-0000289x.mib SSPA MIB file	MIB file consists of all of the OID's for management of the SSPA functions
FW-0000290x.mib SSPA Traps MIB file	Trap MIB file is provided for SNMPv1 traps common for the SSPA.

3.4.2 SNMP Community Strings

In SNMP v1/v2c, the SNMP Community String is sent unencrypted in the SNMP packets. The network administrator must take caution to ensure that SNMP packets travel only over a secure and private network if security is a concern.

The SSPA uses Community Strings as a password scheme that provides authentication before gaining access to the router agent's MIBs. They are used to authenticate users and determine access privileges to the SNMP agent.

Type the SNMP Community String into the user-supplied MIB Browser or Network Node Management software.

Three Community Strings are defined for SNMP access:

- Read Community default = public
- Write Community default = private
- Trap Community default = comtech

For proper SNMP operation, the SSPA MIB files must be used with the associated version of the SSPA M&C. Please see the "SSPA FW Release Notes" for information on the required FW/SW compatibility.

3.4.3 SSPA SNMP Traps

The SSPA has the ability to send out SNMP traps when certain events occur in the unit. The SSPA sends out traps when a fault occurs in the unit. A trap is sent both when a fault occurs and is cleared.

The SNMP agent supports both "**SNMPv1"** and "**v2c"**. The "**Traps"** file only needs to be compiled if "**SNMPv1"** traps are to be used.

You may configure which style of traps the SSPA sends by using the SSPASNMPTrapVersion OID.

The MIB2 v1traps / v2 notifications supported by the SSPA are as follows:

MIB2 SNMPv1 trap: Authentication Failure	5
MIB2 SNMPv2 notifications: Authentication Failure	1.3.6.1.6.3.1.1.5.5

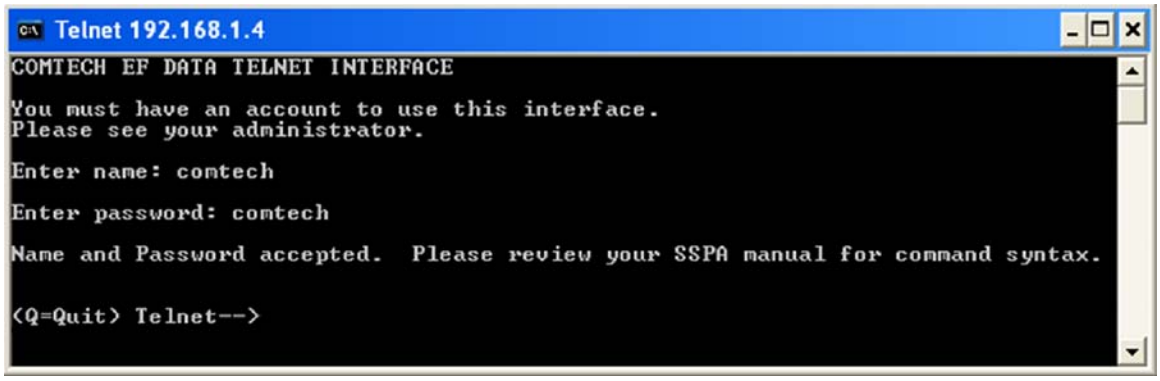
For a list of the Faults v1 Traps / v2 Notifications supported by the SSPA, see **Sect. 4.3.3 SNMP Traps** in **Chapter 4. ETHERNET-BASED REMOTE PRODUCT MANAGEMENT** in the pertinent SSPA manual (CEFD P/N MN-LPOD or MN-SPODPSX).

3.5 SSPA Telnet Interface

The SSPA provides a Telnet interface for the purpose of equipment M&C via the standard Remote Control protocol.

Tera Term, a freeware Telnet Client, is provided on the USB Flash Drive (CEFD P/N PP-0000138) that is included with the CEFD LPODnet Accessory Kit (CEFD P/N KT-0000203); otherwise, a preferred, user-provided interface may be installed onto the LPODnet.

The Telnet interface requires user login at the **Administrator** level and **Read/Write** level. An example of the login process is shown here:



Once logged into the Telnet interface as the Administrator, you can access the standard remote control interface defined in **Chapter 5. SERIAL-BASED REMOTE PRODUCT MANAGEMENT**, in the pertinent SSPA manual (CEFD P/N MN-LPOD or MN-SPODPSX).

3.5.1 Basic Remote Control Protocol via the Telnet Interface

Whether in EIA-232 or EIA-485 mode, all remote control data is transmitted as asynchronous serial characters, suitable for transmission and reception by a UART. The character format should be 8N1 (8 data bits, no parity, 1 stop bit). The baud rate may vary between 2400 and 38400 baud.

All data is transmitted in framed packets. *The Controller that is in charge of the process of monitor and control when using the LPODnet is assumed to be the Telnet Client interface*. The Controller is the only device that is permitted to initiate, at will, the transmission of data. Targets are only permitted to transmit when they have been specifically instructed to do so by the Controller.

All bytes within a packet are printable ASCII characters, less than ASCII code 127. In this context, the Carriage Return and Line Feed characters are considered printable.

All messages from Controller-to-Target require a response – with one exception. This will be either to return data that has been requested by the Controller, or to acknowledge reception of an instruction to change the configuration of the Target. The exception to this is when the Controller broadcasts a message (such as Set time/date) using Address 0, when the Target is set to EIA-485 mode.

3.5.1.1 Packet Structure

Controller-to-Target						
Start of Packet	Target Address	Address Delimiter	Instruction Code	Code Qualifier	Optional Arguments	End of Packet
< ASCII code 60 (1 character)	0-9 ASCII codes 48-57 (4 characters)	/ ASCII code 47 (1 character)	A-Z, a-z ASCII codes 65-90, 97-122 (3 characters)	= *or* ? ASCII codes 61 or 63 (1 character)	(n characters)	Carriage Return ASCII code 13 (1 character)

Example: <0412/MUT=1{CR}

Target-to-Controller						
Start of Packet	Target Address	Address Delimiter	Instruction Code	Code Qualifier	Optional Arguments	End of Packet
> ASCII code 62 (1 character)	0-9 ASCII codes 48-57 (4 characters)	/ ASCII code 47 (1 character)	A-Z, a-z ASCII codes 65-90, 97-122 (3 characters)	=, ?, !, *or* * ASCII codes 61,63,33 or 42 (1 character)	(From 0 to n characters)	Carriage Return, Line Feed ASCII codes 13,10 (2 characters)

Example: >0412/MUT=1{CR}{LF}

3.5.1.1.1 Start of Packet

- **Controller-to-Target:** This is the less-than character '**<**' (ASCII code 60).
- **Target-to-Controller:** This is the greater-than character '**>**' (ASCII code 62).

Because this is used to provide a reliable indication of the start of packet, these two characters may not appear anywhere else within the body of the message.

3.5.1.1.2 Target Address

Up to 9,999 devices can be uniquely addressed. In EIA-232 applications this value is set to 0. In EIA-485 applications, the permissible range of values is 1 to 9999.

The Controller sends a packet with the address of a Target – the destination of the packet. When the Target responds, the address used is the same address, to indicate to the Controller the source of the packet. The Controller does not have its own address.

3.5.1.1.3 Address Delimiter

This is the forward slash character ' **/** ' (ASCII code 47).

3.5.1.1.4 Instruction Code

This is a three-character alphabetic sequence that identifies the subject of the message. Wherever possible, the instruction codes have been named to have some significance.

For example: GAC for **G**lobal **A**mplifier **C**onfiguration; **IPA** for **IP A**ddress, etc. This aids in the readability of the message, should it be displayed in its raw ASCII form. Both upper case and lower case alphabetic characters may be used (A-Z *and* a-z, ASCII codes 65-90 *and* 97-122).

3.5.1.1.5 Instruction Code Qualifier

This single character further qualifies the preceding instruction code. Code Qualifiers obey the following rules:

1. From **Controller-to-Target**, the only permitted characters are:

= (ASCII code 61	This character is used as the assignment operator, and is used to indicate that the parameter defined by the preceding byte should be set to the value of the argument(s) that follow it. For example: In a message from Controller-to-Target, MUT=1 would mean 'enable the Mute function'.
? (ASCII code 63)	This character is used as the query operator, and is used to indicate that the Target should return the current value of the parameter defined by the preceding byte. For example: In a message from Controller-to-Target, SWR? would mean 'returns the value of the internal software revision installed in the unit'.

2. From **Target-to-Controller**, the only permitted characters are:

(ASCII code 61)	This character is used in two ways: First, if the Controller has sent a query code to a Target (for example: MUT?, meaning '*is the Mute enabled or disabled?*'), the Target would respond with MUT=x, where x represents the state in question: 1 being 'enable' and 0 being 'disable'. Second, if the Controller sends an instruction to set a parameter to a particular value, and if the value sent in the argument is valid, then the Target will acknowledge the message by replying with MUT= (with no message arguments).
? (ASCII code 63)	This character is only used if the Controller sends an instruction to set a parameter to a particular value, then, if the value sent in the argument is not valid, the Target will acknowledge the message by replying, for example, with MUT? (with no message arguments). This indicates that there was an error in the message sent by the Controller.
! (ASCII code 33)	This character is only used if the Controller sends an instruction code which the Target does not recognize, the Target will acknowledge the message by echoing the invalid instruction, followed by the ! character. Example: XYZ!
* (ASCII code 42)	This character is only used if the Controller sends an instruction to set a parameter to a particular value, then, if the value sent in the argument is valid, BUT the Target is in the wrong mode (e.g., standby mode in redundancy configuration) and will not permit that particular parameter to be changed at that time, the Target will acknowledge the message by replying, for example, with MUT* (with no message arguments).
# (ASCII code 35)	This character is only used if the Controller sends an instruction code which the Target cannot currently perform because of hardware resource issues, then the Target will acknowledge the message by echoing the invalid instruction, followed by the # character. This response can only occur if the operator sends two or more 'hardware configuration' type commands without allowing adequate time between commands for the hardware to be configured. For example, if the operator issued commands to change both the frequency and the attenuation with less than 100 milliseconds between commands, and if this response is returned, then the command has not been accepted and the operator must resend the command.

3.5.1.1.6 Optional Message Arguments

Arguments are not required for all messages. Arguments are ASCII codes for any printable character.

3.5.1.1.7 End of Packet

- **Controller-to-Target**: This is the 'Carriage Return' character (ASCII code 13).
- **Target-to-Controller**: This is the two-character sequence 'Carriage Return' (ASCII code 13) and 'Line Feed' (ASCII code 10).

Both indicate the valid termination of a packet.

3.5.1.2 Summary of Remote Control Commands and Queries

Table 3-1 on the next page summarizes the remote commands and queries available for the SSPA. Full explanations of functionality are provided in **Chapter 5. SERIAL-BASED REMOTE PRODUCT MANAGEMENT** in the pertinent SSPA manual (CEFD P/N MN-LPOD or MN-SPODPSX).

- Column 'C' = Command.
- Column 'Q' = Query.
- Columns marked '**X**' designate that instruction code as *Command only*, *Query only*, or *Command/Query.*
- Where an Instruction Code is noted XXX^{E} this denotes a command/query designated as End-of-Life (EOL). While these commands are fully supported in this product it is highly recommended that the equivalent new commands are used for new implementations.
- Where an Instruction Code is noted XXX^{O} this denotes a command/query that is available only when a reference oscillator is installed.

Table 3-1. Summary of Available SSPA Remote Commands and Queries

CODE	C	Q	DESCRIPTION (Parameter Type)
AFR	X	X	Auto Fault Recovery
AMP	X	X	RF Power Amplifier state
AOF	X	X	Attenuation Offset
ATT	X	X	Attenuation
AUX	X	X	Auxiliary Mute Enable
CAA[E]	X		Clear All Stored Alarms
CAE	X		Clear All Stored Events
CAS		X	Concise Alarm Status
CCS		X	Concise Configuration Status
CFS		X	Concise RF Power FET Current Status
CID	X	X	Circuit Identification
CLC	X	X	Calibrate LNB Current
CMS		X	Concise Maintenance Status
CSL	X		Clear Statistics Log
CUS[E]		X	Concise Utility Status
CWE	X	X	LNB Current Window Enable
DAT[E]	X	X	Set RTC (Real-Time-Clock) Date
DAY	X	X	Set RTC (Real-Time-Clock) Date
ESA	X	X	Enable Statistics Averaging
ESL	X	X	Enable Statistics Logging
ESW	X	X	Enable Redundancy Switch Mode
FRW		X	Retrieve Firmware Number
GAC	X	X	Global Amplifier Configuration
IEP	X		Initialize Events Pointer
IMG	X	X	Software Image
IPA	X	X	IP Address
IPG	X	X	IP Gateway Address
ISP	X		Initialize Statistics Pointer
LCS	X	X	LNB Current Source
LCW	X	X	LNB Current Window
LNA[E]		X	Retrieve Next 5 Unread Stored Alarms
LPT	X	X	Low Power Forward Threshold
LRS	X	X	Local/Remote State
MAC		X	Unit MAC address
MSK	X	X	Unit Alarm Mask
MOP		X	Maximum Operating Point
MUT	X	X	Mute State
NUE		X	Number of Unread Stored Events
NUS		X	Number of Unread Stored Statistics
OFM	X	X	Offline Mute
ONL	X	X	Online Status
PNM		X	Part NuMber
RAS		X	Retrieve Alarm Status
RBT	X		Reboot

CODE	C	Q	DESCRIPTION (Parameter Type)
RCS		X	Retrieve Configuration Status
RED	X	X	Redundancy online status
REF	X	X	Reference Oscillator Tuning
RET[E]		X	Retrieve Equipment Type
RFS		X	RF Power FET Current Status
RMS		X	Retrieve Maintenance Status
RNE		X	Retrieve Next 5 Unread Stored Events
RNS		X	Retrieve Next 5 Unread Stored Statistics
RSN[E]		X	Retrieve Serial Number
RUS		X	Retrieve Utility Status
SBR	X	X	Remote Baud Rate
SBT	X	X	Switch Bias Tee
SFA	X	X	Set FSK Address
SFS[E]		X	Summary Fault Status
SNA	X	X	SNMP Trap Authentication
SNM	X	X	SNMP Enable
SNO	X	X	Serial Number
SPA	X	X	Remote Address
SRC	X	X	SNMP Read Community
SSC	X	X	SNMP System Contact
SSI	X	X	Set Statistics Interval
SSL	X	X	SNMP System Location
SSN	X	X	SNMP Unit Name
STA	X	X	SNMP Trap Destination – IP Address 1
STB	X	X	SNMP Trap Destination – IP Address 2
STV	X	X	SNMP Trap Version
SWC	X	X	SNMP Write Community
SWR		X	Retrieve Software Revision
TIM	X	X	Set RTC Time
TMP		X	Temperature
TNA[E]		X	Retrieve Number of Unread Stored Alarms
TNE		X	Retrieve Number of Unread Stored Events
TPE	X	X	Time Protocol Enable
TPS	X	X	Time Protocol Server
TSC		X	Terminal Status Change
XRM[O]	X	X	External Reference Mute

3.6 SSPA Web Server (HTTP) Interface

A user-supplied web browser allows the full monitor and control (M&C) of the SSPA from its Web Server Interface. This embedded web application is designed for, and works best with, Microsoft's Internet Explorer Version 6.0 or higher (the examples shown use Internet Explorer Version 7.0).

As this manual assumes user familiarity with SSPA operations, you should also refer to the pertinent detailed information as provided in the pertinent SSPA manual (CEFD P/N MN-LPOD or MN-SPODPSX):

- For detailed information about the functionality of the individual Web pages depicted in this chapter, see **Sect. 4.5 Web Server (HTTP) Interface** in **Chapter 4. ETHERNET-BASED REMOTE PRODUCT MANAGEMENT**.

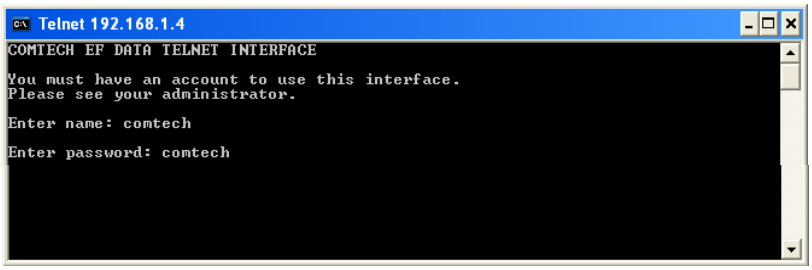
- For explicit information about the Remote Commands and Queries emulated by the SSPA Web Server (HTTP) Interface, see **Chapter 5. SERIAL-BASED REMOTE PRODUCT MANAGEMENT**.

3.6.1 Enabling the SSPA Web Server Interface

To enable the Web Server Interface in the SSPA using only a 100BaseTx remote interface:

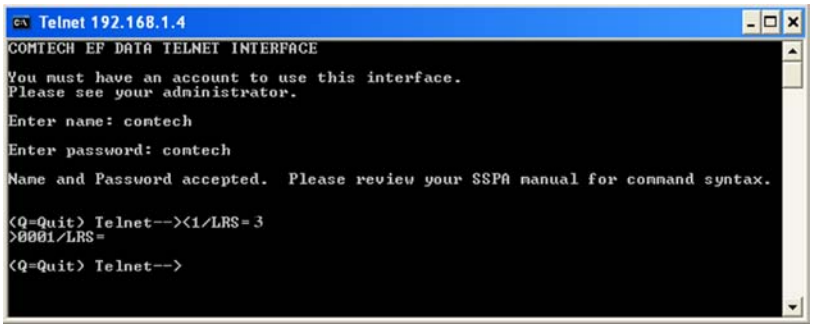
1. Open the user-installed Telnet Client and connect to the SSPA using the default IP address of **192.168.1.4**.

2. Enter the Telnet username and password (the default for both is **comtech**):



3. Set the remote access parameter to accept Ethernet remote control using the **LRS** command.

   LRS=3, the default remote command, provides ***Serial + Ethernet control***. Remote command **LRS=2** provides ***Ethernet control only***.



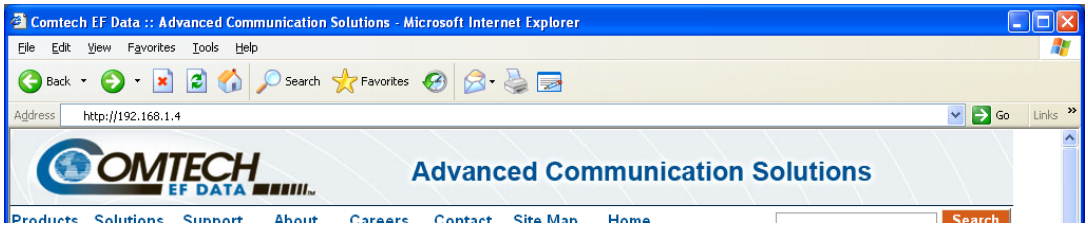
1. ***Each unit on the network must have its own unique IP address before it is connected to an existing network. The IP address may need to be changed to something other than the factory default setting by using the command IPA=xxx.xxx.xxx.xxx.yy, where: xxx.xxx.xxx.xxx is a valid IP address on the network where the unit will be installed, and yy is the range (typically, yy = 24).***

2. ***Changing the IPA value requires you to cycle power on the unit, and then start a new Telnet session using the new IP address.***

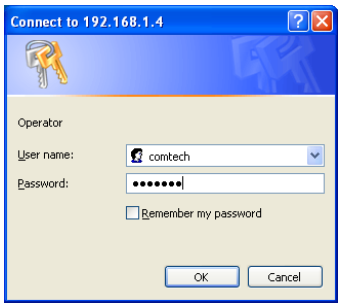
3. ***See Chapter 5. SERIAL-BASED REMOTE PRODUCT MANAGEMENT in the pertinent SSPA manual (CEFD P/N MN-LPOD or MN-SPODPSX) for more information on the LRS and IPA commands.***

3.6.2 Accessing the SSPA Web Server Interface

1. From the LPOD*net*, open a Web browser and type **http://192.168.1.4** (the default IP address for the SSPA) into the **Address** area of the browser:



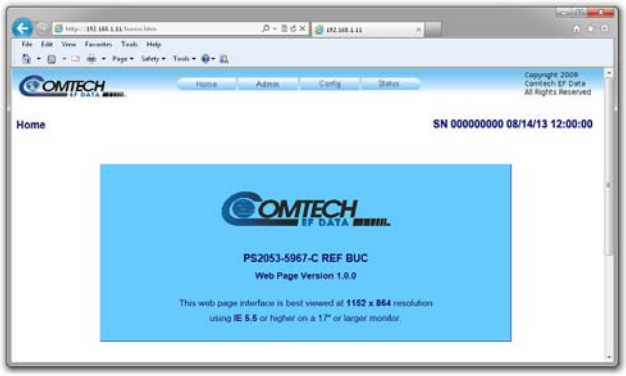
2. The Login window appears and you are prompted to type a User Name and Password:



Default User Name – **comtech**
Default Password – **comtech**

Type the User Name and Password, then click **[OK].**

3. Once the valid IP address and login information has been entered, the SSPA Web Server (HTTP) Interface "Splash" page is displayed:



3.6.3 Web Server Interface – Operational Features

3.6.3.1 Menu Tree

This menu tree diagram lists the features available through the SSPA Web Server Interface (except where noted ** for LPOD operations only). This interface features four navigation tabs (shown in blue). The nested page hyperlinks (grey) provide access to individual Web pages.

Home	Admin	Config	Status
Home	Access	Amplifier	Summary
Contact	SNMP	LNB**	Status
Support		Utility	FETs
		Redundancy	Events
			Statistics
			Trending Graphs

3.6.3.2 Page Navigation

The Web Server Interface features four navigation tabs located at the top of each page. After you click a navigation tab, you may click an available page hyperlink.

This manual uses a naming format for all web pages to indicate to you the navigation needed to view the referenced page: "**Navigation Tab | Page Hyperlink.**"

For example, interpret "**Home | Support**" to mean, "*first* click the '**Home**' navigation tab, and *then* click the '**Support**' page hyperlink."

3.6.3.3 Page Sections

Each page features one or more sections. The title at the upper-left corner of each page or page section describes its operational features. Each section can feature editable fields, action buttons, and read-only displays for a specific function.

This manual explains the purpose and operation for each Web page on a ***per-page, per-section*** basis.

3.6.3.4 Action Buttons

Action buttons are important in the SSPA Web Server Interface. Click an action button to do one of these tasks:

- Refresh the page with current data.
- Reset changed parameters to remove ***unsaved*** changes.
- Submit (permanently save) changes.

If you edit a field, make sure to click the action button before you leave the page. If you go to another page without first clicking the action button, your changes are <u>not</u> saved.

3.6.3.5 Drop-down Lists

A drop-down list lets you choose from a list of selections. Left-click the drop-down button to open the list. Then, left-click on an item to select that choice.

3.6.3.6 Text or Data Entry

Text boxes let you type data into a field. An action button may be associated with a single text box, or a group of text boxes.

For any text box, left-click anywhere inside the box, type the desired information into that field, and be sure to press **[ENTER]** when done.

Click the related action button to save the data.

If you edit any field, make sure to click the action button before you leave the page. If you go to another page without first clicking the action button, your changes are <u>not</u> saved.

3.6.4 Web Server Interface – Web Page Descriptions

The Web Server Interface pages, as depicted in the figures featured through the end of this chapter, show operational examples from the LPOD Web Server Interface. The appearance of these pages will vary from your actual implemented network. These figures are provided for reference purposes only.

3.6.4.1 Home Pages

Click the **Home** tab, and then click the **Home**, **Contact**, or **Support** hyperlink to continue.

3.6.4.1.1 Home | Home

Use this page to identify the SSPA Web Server Interface, the specific product, and its assigned serial number. Click the **Home** tab and/or the nested **Home** hyperlink to return to this page from anywhere in the Web Server Interface.

Figure 3-1. SSPA Home | Home Page

3.6.4.1.2 Home | Contact

Use this page to see the contact information (phone, fax, or Web/e-mail hyperlinks) for Comtech EF Data Sales or Customer Support.

Figure 3-2. Home | Contact Page

3.6.4.1.3 Home | Support

For this page to operate correctly, the Administrator must define the SMTP server, domain name, and destination on the* Admin | Access *page (see Sect.3.6.4.2.1).

This page uses SMTP (Simple Mail Transport Protocol) to compose and send an e-mail message to Comtech EF Customer Support (techsupport@comtechefdata.com). Use this communications portal for questions about or problems with the unit.

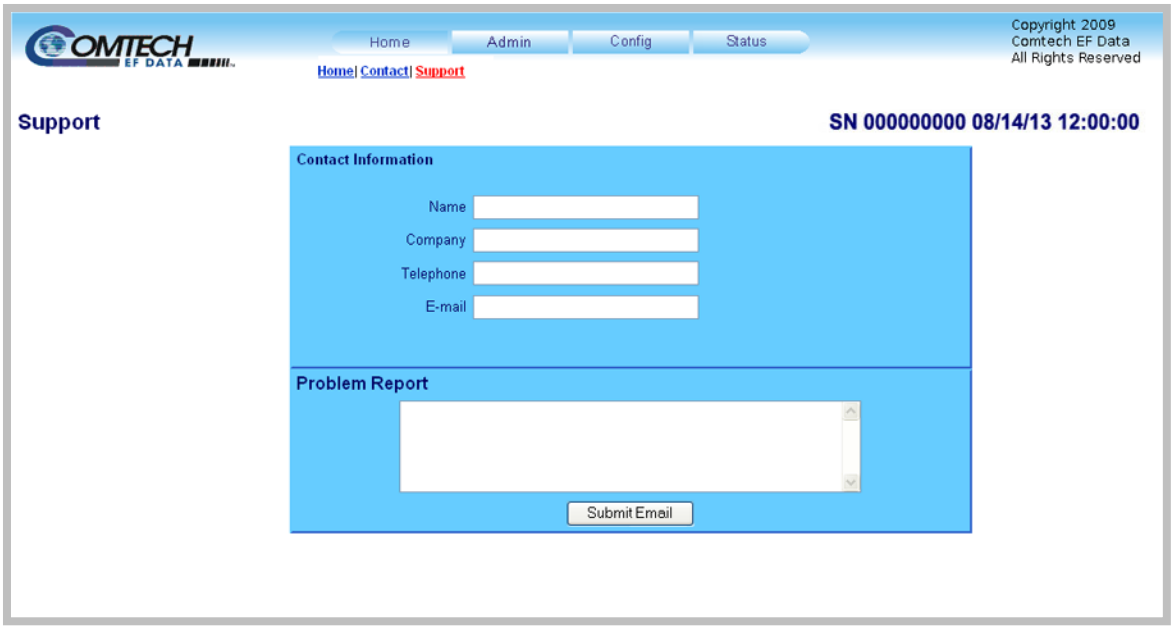


Figure 3-3. Home | Support Page

3.6.4.2 Admin Pages

The Admin pages are available only to users who have logged in using the Administrator Name and Password.

Click the **Admin** tab, and then select the **Access** or **SNMP** hyperlink to continue.

3.6.4.2.1 Admin | Access

The Administrator must use this page to manage the Web Server Interface user access settings.

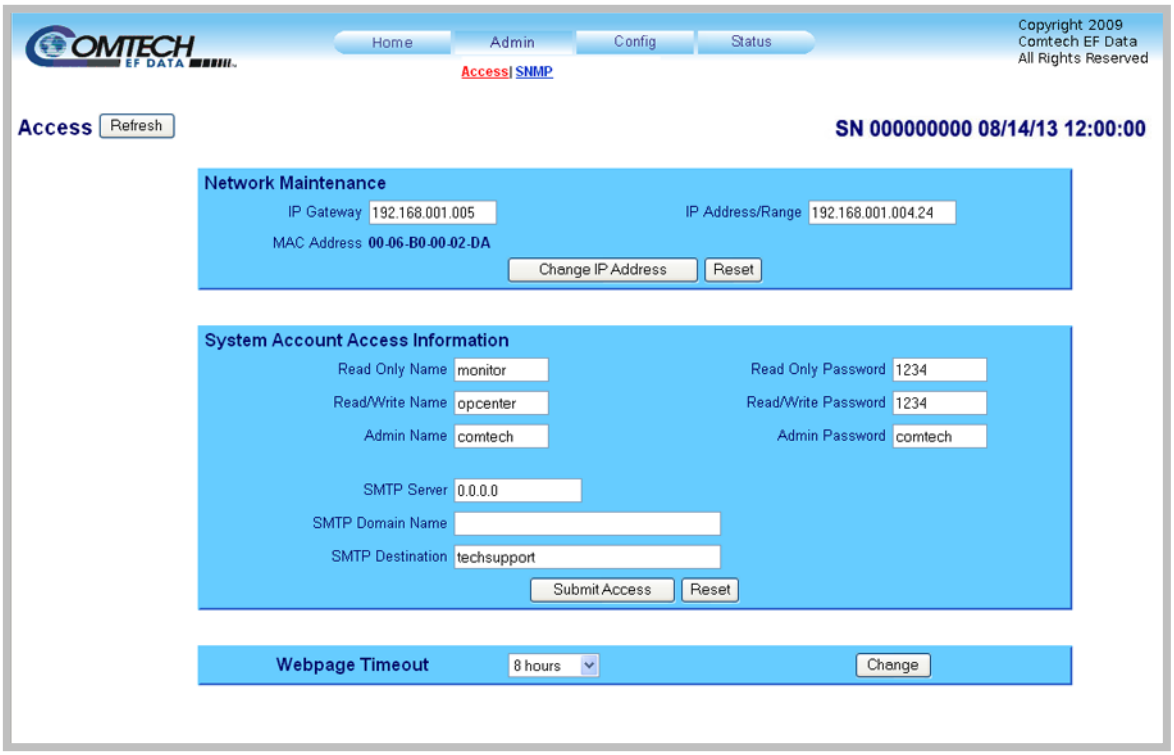


Figure 3-4. Admin | Access Page

3.6.4.2.2 Admin | SNMP

The Administrator must use this page to manage the SSPA SNMP (Simple Network Management Protocol) settings.

Figure 3-5. Admin | SNMP Page

3.6.4.3 Config Pages

Click the **Config** tab, and then click the **Amplifier**, **LNB (LPOD only)**, **Utility**, or **Redundancy** hyperlink to continue.

3.6.4.3.1 Config | Amplifier

Use this page to configure the communications, operations, and alarms/faults handling for the amplifier.

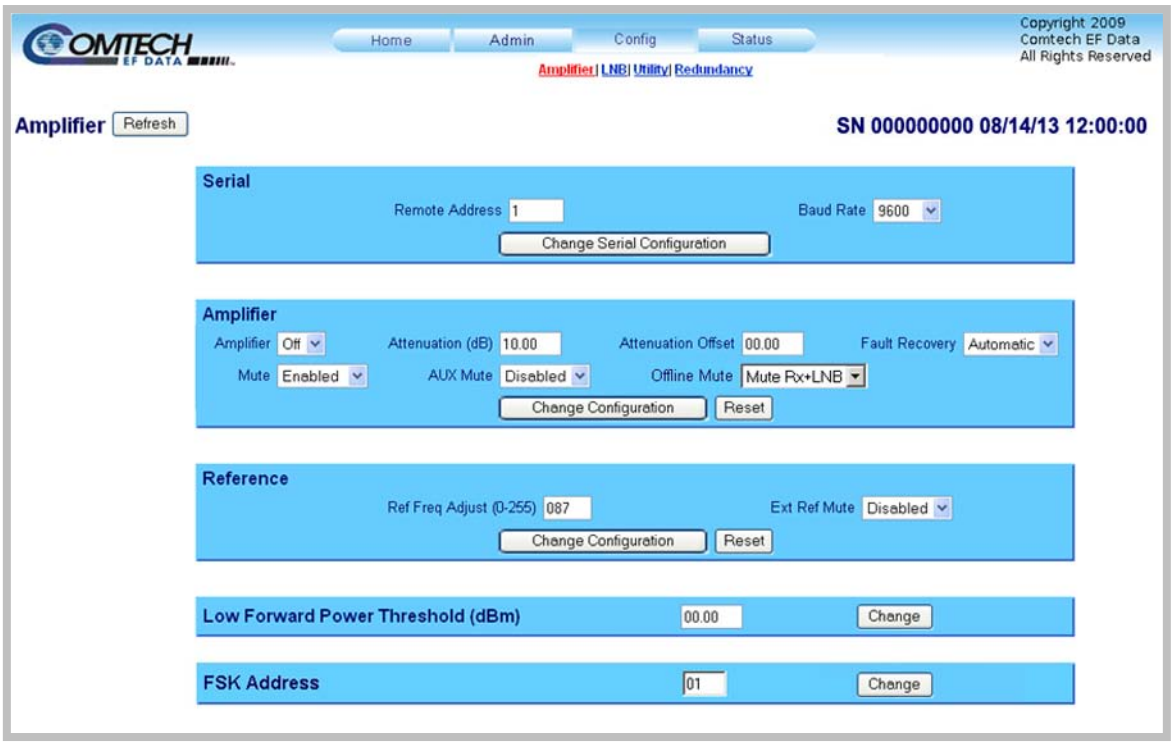


Figure 3-6. Config | Amplifier Page

3.6.4.3.2 Config | LNB (LPOD Only)

The* 'Config | LNB' *page is <u>not</u> applicable to SPOD operations.

Use this page to configure the LPOD's Low-Noise Block Downconverter parameters, and display the LNB status for L-Band operation.

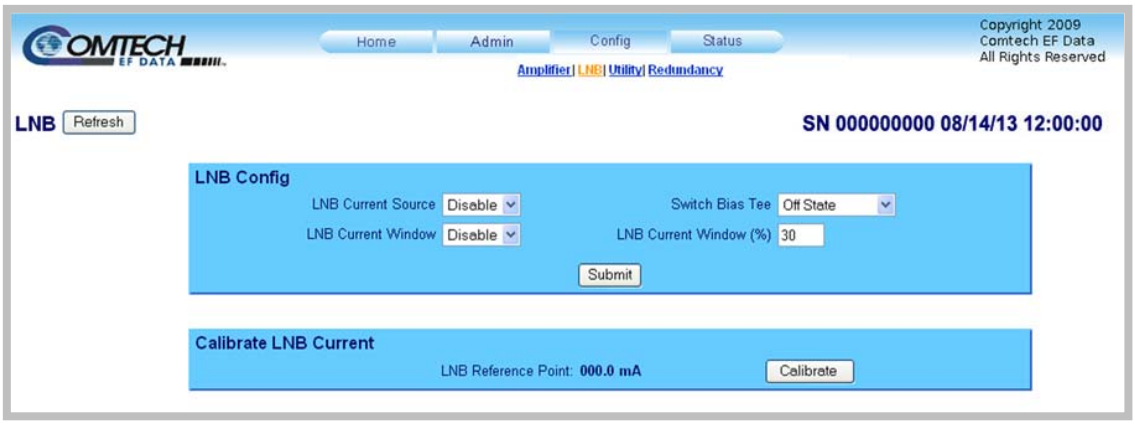


Figure 3-7. Config | LNB Page

3.6.4.3.3 Config | Utility

Use this page to configure SSPA operating parameters.

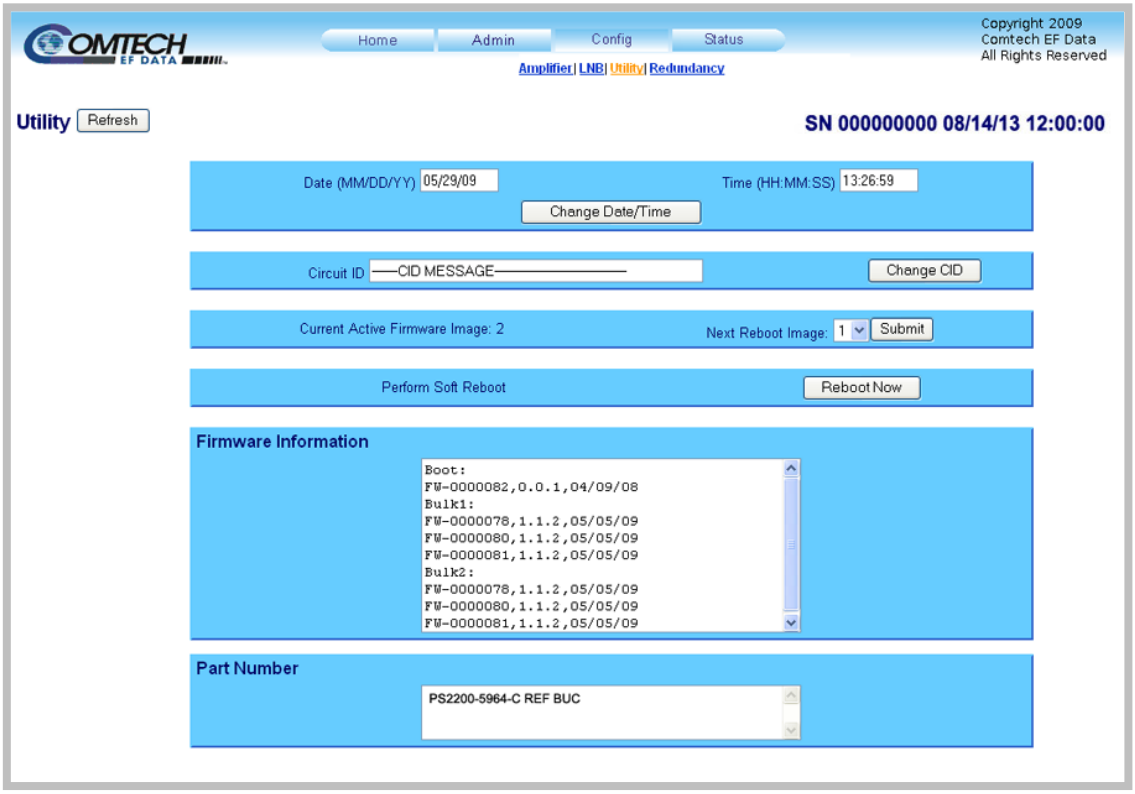


Figure 3-8. Config | Utility Page

3.6.4.3.4 Config | Redundancy

See* Appendix A. 1:1 REDUNDANCY *in the pertinent SSPA manual (CEFD P/N MN-LPOD or MN-SPODPSX) for more information about 1:1 redundant operations.

Use this page to configure the SSPA's Redundancy Switch Mode.

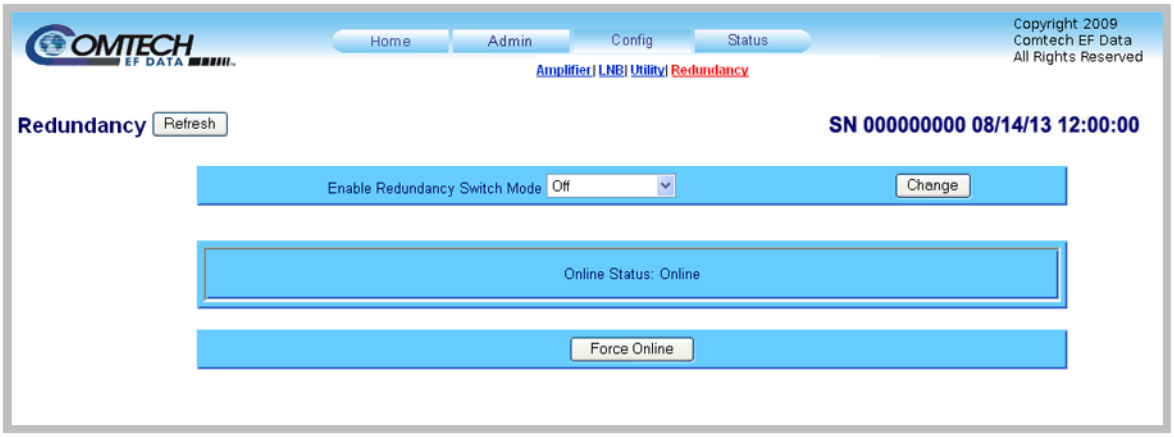


Figure 3-9. Config | Redundancy Page

3.6.4.4 Status Pages

Use these pages to access to event logging, operational statistics, status, FET windows, and operational trending graphs.

Click the **Status** tab, and then click the **Summary**, **Status**, **FETs, Events**, **Statistics**, or **Trending Graphs** hyperlink to continue.

3.6.4.4.1 Status | Summary

Use this *read-only* page to view pertinent condensed information about the SSPA unit and its current operating state.

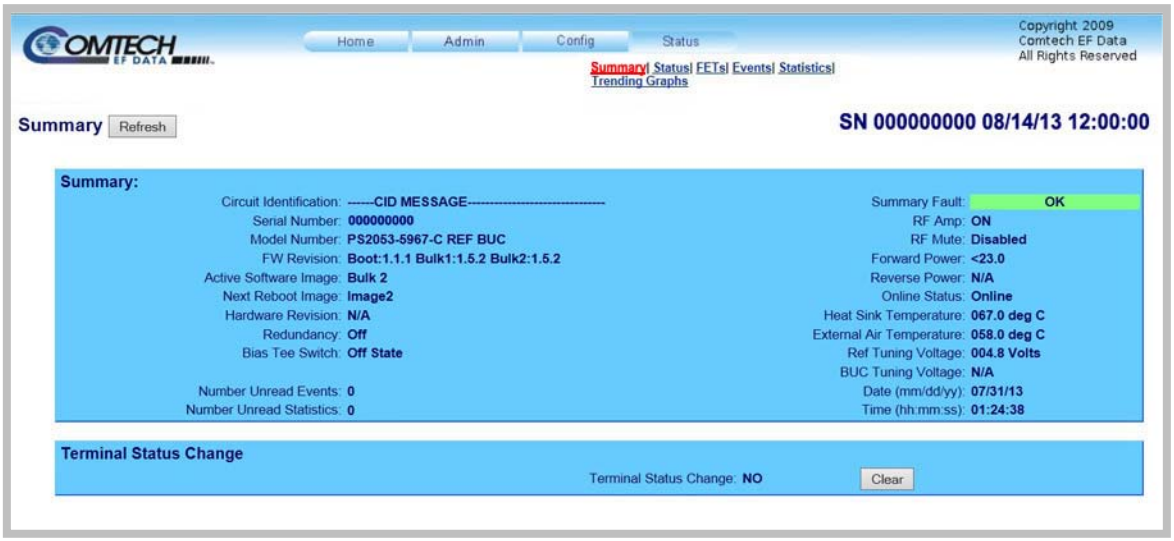


Figure 3-10. Status | Summary Page

3.6.4.4.2 Status | Status

Use this *read-only* page to review all pertinent information about the SSPA.

Unlike the remaining pages available through this interface that refresh/update only when manually selected, the* 'Status | Status' *page updates automatically once every 10 seconds. Even with this automatic refresh function, you may click [Refresh] to update the operational status parameters found on this page.

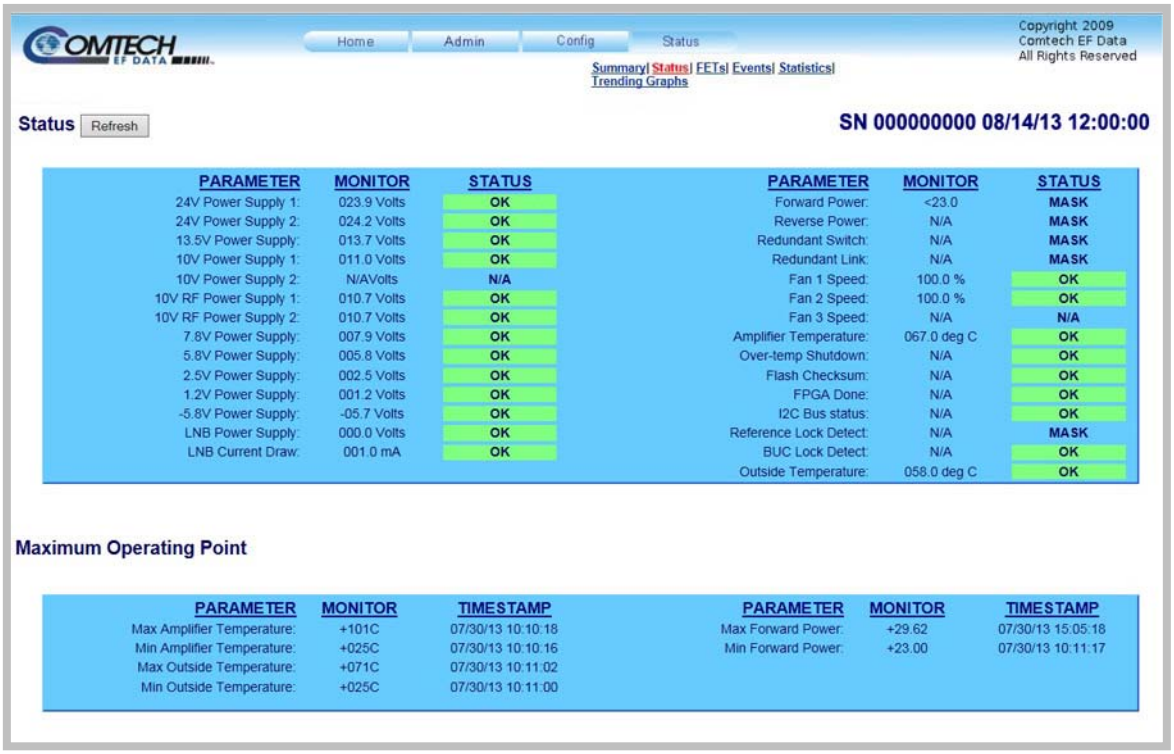


Figure 3-11. Status | Status page

3.6.4.4.3 Status | FETs

Use this ***read-only*** page to monitor the current operating status of the SSPA's Q01 through Q09 RF Power **F**ield **E**ffect **T**ransistor**s** (FETs) that are installed in the RF amplifier.

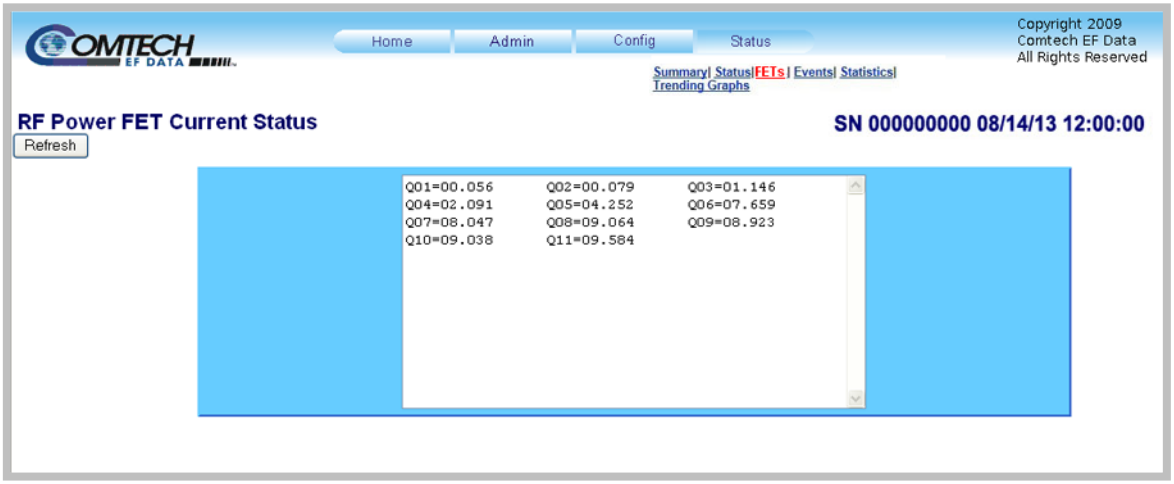


Figure 3-12. Status | FETs page

3.6.4.4.4 Status | Events

Use this page to view with all pertinent information about stored events, and to define the alarm parameters that determine how ongoing SSPA operations shall trigger events and alarms.

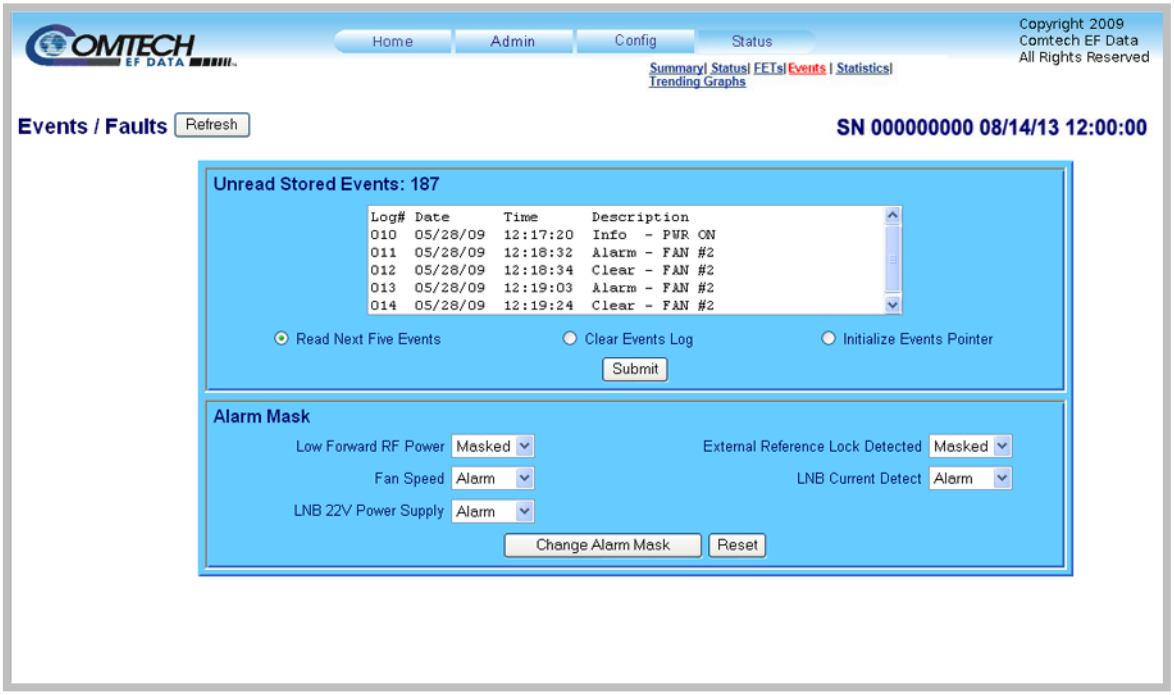


Figure 3-13. Status | Events Page

3.6.4.4.5 Status | Statistics

Use this page to review all unread (stored) statistics, and to configure how the SSPA handles and displays statistics.

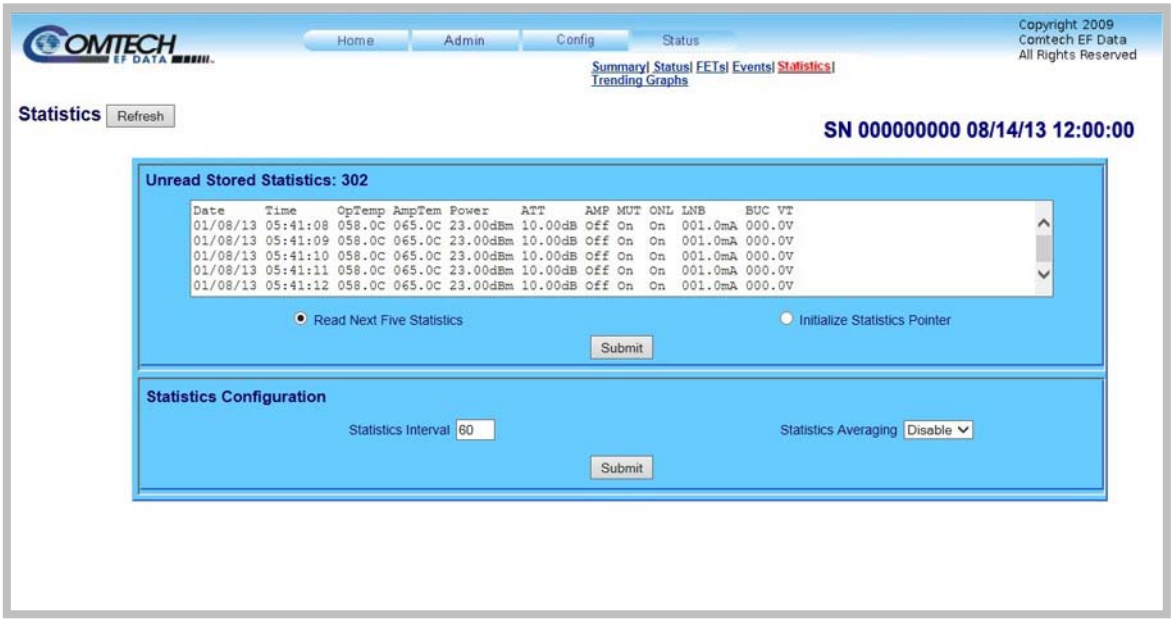


Figure 3-14. Status | Statistics page

3.6.4.4.6 Status | Graphs

This scrollable page features a universal page controls bar plus seven trending and operations graphs that provide statistics for the following parameters:

- **Temperature**
- **Power**
- **LNB Current**
- **Amplifier Status**
- **Mute Status**
- **Online Status**
- **Minimum Fan Speed**

Figure 3-15. Status | Graphs Page

METRIC CONVERSIONS

Units of Length

Unit	Millimeter	Centimeter	Inch	Foot	Yard	Meter	Kilometer	Mile
1 millimeter	1	0.1	0.0394	0.0033	0.0011	0.001	1×10^{-6}	6.214×10^{-7}
1 centimeter	10	1	0.3937	0.0328	0.0109	0.01	1×10^{-5}	6.214×10^{-6}
1 inch	25.4	2.54	1	0.0833	0.0278	0.0254	2.54×10^{-5}	1.578×10^{-5}
1 foot	304.8	30.48	12	1	0.3333	0.3048	3.048×10^{-4}	1.894×10^{-4}
1 yard	914.4	91.44	36	3	1	0.9144	9.144×10^{-4}	5.682×10^{-4}
1 meter	1000	100	39.37	3.2808	1.0936	1	0.001	6.214×10^{-4}
1 kilometer	1×10^{6}	1×10^{5}	3.938×10^{4}	3.281	1093	1000	1	0.6214
1 mile	1.609×10^{6}	1.609×10^{5}	6.336×10^{4}	5280	1760	1609	1.609	1

Temperature Conversions

Temperature	° Fahrenheit	° Centigrade
Water freezes	32	0
Water boils	212	100
Absolute zero	-459.69	-273.16

Formulas
° C = (F - 32) * 0.555
° F = (C * 1.8) + 32

Units of Weight

Unit	Gram	Ounce Avoirdupois	Ounce Troy	Pound Avoirdupois	Pound Troy	Kilogram
1 gram	—	0.03527	0.03215	0.002205	0.002679	0.001
1 oz. avoir.	28.35	—	0.9115	0.0625	0.07595	0.02835
1 oz. troy	31.10	1.097	—	0.06857	0.08333	0.03110
1 lb. avoir.	453.6	16.0	14.58	—	1.215	0.4536
1 lb. Troy	373.2	13.17	12.0	0.8229	—	0.3732
1 kilogram	1.0×10^{3}	35.27	32.15	2.205	2.679	—

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